IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A process for preparation of an immunogenic peptide mixture comprising the steps of:

obtaining immunogenic epitope ~~eptitope~~ sequences of a pathogen, said immunogenic epitope sequences having a common residue region and at least one variable residue with which said sequences differ from each other;

determining the frequency with which different amino acids are found at the at least one ~~a~~ variable residue of the immunogenic epitope sequences; the at least one variable residue comprising an amino acid selected from the amino acids most frequently found at the variable residue in the immunogenic epitope sequences of the pathogen, and found at the variable residue with a frequency greater than a threshold frequency of about 12%;

rounding the frequency with which an amino acid is found at a variable residue to the nearest 25%, wherein only those amino acids having a non-zero rounded frequency are included at the variable residue position in the peptides of the peptide mixture; the frequencies of similar amino acids found individually at a variable residue below the threshold frequency being pooled to form a pooled frequency, the pooled frequency being assigned to the most frequently found of the similar amino acids to calculate the rounded frequency; and

synthesizing a peptide mixture comprising from 2 to about 64 ~~up to about 100~~ different peptides, each peptide having the common residue region and having at a variable residue position an amino acid selected from those found at a variable residue of the immunogenic epitope sequences at a non-zero rounded frequency ~~with a frequency greater than a threshold frequency of from about 10% to about 30%~~; the different amino acids appearing at the variable residue position being present relative to each other in proportion to the rounded frequency with which each different amino acid appears at the variable residue of the immunogenic epitope sequences, there being from 2 to 4 different amino acids appearing at the variable residue of different peptides within the peptide mixture.

Claims 2- 9 (cancelled)

10. (Currently amended) The process of claim 1 ~~7~~ wherein similar amino acids are amino acids belonging to a single classification selected from ~~those belonging to~~ the group consisting of: aromatic amino acids; aliphatic amino acids; aliphatic hydroxyl side chain amino acids; basic amino acids; acidic amino acids; amide-containing amino acids, and sulphur-containing amino acids.

11. (Currently amended) The process of claim 1 ~~75~~ wherein the step of synthesizing ~~synthesis~~ is conducted using amino acid coupling, and the variable residue position is coupled by adding amino acids in proportion to the ~~their~~ rounded frequencies determined in the step of rounding.

12. (Canceled)

13. (Canceled)

14. (Withdrawn) The process of claim 1 wherein at least one step is conducted using a bioinformatics methodology.

15. (Canceled)

16. (Canceled)

17. (Withdrawn) A peptide mixture immunogenic to a pathogen, said mixture comprising up to about 100 different peptides, each peptide having a common residue region and having a variable residue position; the common residue region of the different peptides being non-variable amino acids of an immunogenic epitope sequence of a pathogen, adjacent a variable residue of the immunogenic epitope sequence; the variable residue position being occupied by an amino acid selected from the group consisting of the most frequently occurring amino acids at the variable residue of the immunogenic epitope sequence provided that: (a) no more than four different amino acids are present at the variable residue position of the different peptides of the peptide mixture; and (b) an amino acid present at the variable residue position of the different peptides appears at the variable residue of the immunogenic epitope sequence with a frequency greater than a threshold frequency of from about 10% to about 30%.

18. (Withdrawn) The peptide mixture of claim 17, wherein the frequency with which an amino acid appears at a variable residue position is determined according to the following scheme: the frequency with which an amino acid occurs at the variable residue of the immunogenic epitope sequence is rounded to the nearest 25%, and amino acids having non-zero rounded frequencies are found at the variable residue position of the different peptides with a frequency proportional to the rounded frequency.

19. (Withdrawn) The peptide mixture of claim 18, wherein the frequency with which similar amino acids having a rounded frequency less than 25% appear at a variable residue position is determined according to the following scheme: the frequencies of similar amino acids are pooled and rounded to the nearest 25%; for non-zero rounded frequencies, the rounded frequency is assigned to the most frequently occurring of the similar amino acids; the most frequently occurring of the similar amino acids is found at the variable residue position of the different peptides with a frequency proportional to the rounded frequency.

20. (Withdrawn) A conjugated peptide composition comprising the peptide mixture of claim 17 conjugated to a lipid moiety.

21. (Withdrawn) A conjugated peptide composition comprising the peptide mixture of claim 17 conjugated to a carrier protein moiety.

22. (Withdrawn) An immunogenic composition comprising a plurality of peptide mixtures formed according to claim 17,

wherein each of said peptide mixtures is immunogenic to the same pathogen.

23. (Withdrawn) The immunogenic composition according to claim 22, wherein each of said plurality of peptide mixtures is directed to a different immunogenic epitope sequence of the same pathogen, and the different immunogenic epitope sequences are found in regions in close proximity on the pathogen surface.

24. (Withdrawn) A vaccine for invoking an immunogenic response against a pathogen comprising the peptide mixture of claim 17 and a pharmaceutically acceptable carrier.

25. (Withdrawn) A method of vaccination against a pathogenic disease comprising the step of administering to a subject an effective amount of the vaccine of claim 24.

26. (Withdrawn) A method of diagnosing infection of a subject by a pathogen, the method comprising the steps of: obtaining an antibody-containing biological sample from said subject; contacting the biological sample with the immunogenic peptide mixture of claim 1 based on immunogenic epitope sequences of the pathogen; and evaluating immunogenic response of said sample with said peptide mixture.

27. (Withdrawn) A diagnostic kit for determining infection of a subject by a pathogen comprising: the immunogenic peptide mixture of claim 1 based on immunogenic epitope sequences of the pathogen, and directions for evaluating an immunogenic response

of an antibody-containing biological sample of the subject with the immunogenic peptide mixture.

28. (Withdrawn) A process for isolating an antibody immunogenic to a pathogen comprising the steps of: administering to a subject the peptide mixture of claim 17; and obtaining an antibody from the subject induced by administration of the peptide mixture.

29. (Withdrawn) A process for isolating a gene encoding an antibody immunogenic to a pathogen comprising the steps of: administering to a subject the peptide mixture of claim 17; obtaining an antibody from the subject induced by administration of the peptide mixture; and isolating a gene encoding the antibody.

30. (Withdrawn) A process for isolating a portion of a gene or genetic material encoding genetic material encoding all or part of an antibody reactive with a pathogen comprising the steps of: administering to a subject the peptide mixture of claim 17; obtaining from the subject an antibody, or part of an antibody reactive with the pathogen, induced by administration of the peptide mixture; and isolating said portion of a gene or genetic material encoding the antibody or the part of the antibody reactive with the pathogen.

31. (Withdrawn) An immunotherapy against a pathogen comprising administration of a peptide or protein encoded by a portion of the gene or genetic material obtained according to the process of claim 30 to a subject.

32. (New) The process according to claim 1 wherein the pathogen is a virus.

33. (New) The process according to claim 1 wherein the pathogen is selected from the group of RNA viruses consisting of HIV, HCV and Influenza.

34. (New) The process according to claim 1 wherein the pathogen is HIV.

35. (New) The process according to claim 1 wherein the pathogen is HCV.

36. (New) The process according to claim 1 wherein the pathogen is influenza.